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BEYOND BLUE 4: THE PAST AND FUTURE TRANSFORMATION
OF RED FLAG

by

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14. ABSTRACT

For almost 30 years, Red Flag has given relatively inexperienced aircrew-Blue 4-a chance to experience eight to ten realistic combat missions in a high threat, but safe environment. It has also given more experienced pilots the chance to serve as package commanders and learn how to best employ an integrated large-force package to achieve a tactical objective. However, as the complexity of air operations has increased-with the advent of network-centric warfare, precision-guided munitions, stealth technology, and the integration of special operations, space, and information warfare into the Combat Air Forces-so has the pressure to change Red Flag to include more platforms and expand its training focus. The Air Force now has an historic opportunity to foster a new era of realistic training. More importantly, the expansion of Red Flag-without corresponding improvements in the range, aggressor, and assessment capabilities-will actually decrease the training value of Red Flag. Transforming Red Flag will not come "on the cheap" as did the original Red Flag exercise that simply combined pre-existing Aggressor capabilities and range space. This paper reviews the origins of Red Flag, highlights recent changes in the exercise, and provides recommendations on how to guide the transformation of Red Flag.

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Preface

For over 27 years, Red Flag has been considered the Air Force's premier air combat exercise. Thousands of aircrew, intelligence analysts, and other support personnel have endured long days and nights planning for, arguing about, and flying in Red Flag missions. However, anyone who has been to Red Flag in the past five years knows the exercise has undergone dramatic changes. Red Flag is not just for fighter pilots anymore. Today's Red Flag includes a diverse mix of participants, each hoping to get ten realistic combat training missions in a two-week period. As a result of realistic training programs instituted after Vietnam, today's aircrew are better trained than their predecessors. Ironically, the result is that they are continually frustrated by the numerous "Red Flagisms" inherent in the exercise. They are told to focus on the tactical problem of the day even though they are trained to think operationally. They are told to fly through threats to hit individual targets, even though their experience tells them to roll-back enemy ground threats with stealth, electronic warfare aircraft, and precision-guided bombs. Realistic training at Red Flag, just like the joint forces it is intended to train, is in a period of transition. This paper will offer some insight into these changes—gained from my three-years serving as Red Flag's Chief of Intelligence—and offer some recommendations on how to take Red Flag to a new level of realistic training.

I would like to acknowledge the assistance of my thesis advisor, Dr. Michael Grumelli, who gave me the latitude to explore this important topic but then helped me focus my thoughts into a "doable" project. I would also like to thank Mr. Gary Sambuchi, Red Flag Project Manager at

HQ ACC, who kept me appraised of the future changes in Red Flag. Finally, I would like to recognize the hard work and dedication of the Red Flag and Nellis CAOC staffs. Despite facing overwhelming odds, plenty of criticism, and sometimes disappointing feedback from the Air Force promotion system, these great Americans make Red Flag the best air combat training program in the world. They deserve nothing but praise for their efforts.

Abstract

For almost 30 years, Red Flag has given relatively inexperienced aircrew—Blue 4—a chance to experience eight to ten realistic combat missions in a high threat, but safe environment. It has also given more experienced pilots the chance to serve as package commanders and learn how to best employ an integrated large-force package to achieve a tactical objective. However, as the complexity of air operations has increased—with the advent of network-centric warfare, precision-guided munitions, stealth technology, and the integration of special operations, space, and information warfare into the Combat Air Forces—so has the pressure to change Red Flag to include more platforms and expand its training focus. The Air Force now has an historic opportunity to foster a new era of realistic training. More importantly, the expansion of Red Flag—without corresponding improvements in the range, aggressor, and assessment capabilities—will actually decrease the training value of Red Flag. Transforming Red Flag will not come "on the cheap" as did the original Red Flag exercise that simply combined pre-existing Aggressor capabilities and range space. This paper reviews the origins of Red Flag, highlights recent changes in the exercise, and provides recommendations on how to guide the transformation of Red Flag.

Chapter 1

The History of Red Flag

An era of unparalleled realistic combat training has begun. [1]

— TAC Commander Gen Robert Dixon, in a message announcing the first Red Flag

Anyone who has attended Red Flag probably knows what the exercise was designed to achieve. Following a dramatic drop in the Air Force's air-to-air kill ratio between the Korean War (10:1 ratio) and the Vietnam War (2:1 ratio), a group of fighter pilots working in the Headquarters Air Force, Directorate of Operations hatched a proposal to create a training exercise intended to replicate the stresses of combat. The goal was to give a pilot his "first ten combat missions" in a realistic, but safe learning environment. Despite facing some initial resistance, one of the pilots—Major Richard "Moody" Suter—persisted with the idea until he found an ally in the Tactical Air Command (TAC) commander, General Robert Dixon. Less than five months after Gen Dixon approved the concept, the first Red Flag exercise took place. For his efforts, Suter is often called the "father of Red Flag," and the Red Flag building at Nellis AFB, Nevada bears his name today.

For almost 30 years, the Red Flag exercise has trained relatively inexperienced airmen to survive in combat. Red Flag's training focus has been on Blue 4—Lieutenants and Captains who are competent in their aircraft, but lack experience flying as part of a composite strike force. Red Flag has also given more experienced pilots—senior Captains and Majors—the opportunity to serve as package commanders, either for the overall Red Flag mission or for their particular

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mission area (i.e. Offensive Counter Air, Suppression of Enemy Air Defenses, etc.) Mission commander training allows these senior pilots to learn how to best employ an integrated large-force package to achieve a tactical objective.

However, as the complexity of air operations has increased—with the advent of network-centric warfare, precision-guided munitions, stealth technology, and the integration of special operations, space, and information warfare into the Combat Air Forces—so has the pressure to change Red Flag to include more platforms and expand its training focus. This paper will consider the changes Red Flag has undergone since its inception, evaluate the impact of those changes, and make recommendations for ways in which to improve realistic training. The main question this paper seeks to answer is: "Should Red Flag expand beyond Blue 4 and Mission Commander training?" Asked another way, "Would Moody Suter approve of today's Red Flag exercise?" In order to answer these questions, it is important to understand the historical context that drove the need for Red Flag.

Historic Trends in Combat Losses

As previously indicated, USAF air combat effectiveness (as measured by the air-to-air kill ratio) decreased significantly during the Vietnam War. Disturbed by this trend, the Air Force set out to identify the root cause of its loss in proficiency. The USAF Tactical Fighter Weapons Center (TFWC) at Nellis AFB was tasked to conduct a series of studies—called "Project Red Baron"—to analyze Vietnam War air-to-air engagements. An interim report released in 1972 identified three significant trends. First, the report found that multi-role fighter units were expected to perform a broad range of missions, and pilots lacked proficiency across the board. Due to this lack of specialization, home-station training was measured purely in the number of hours flown regardless of what type of training was conducted. Second, most USAF pilots who

were shot down never saw their attackers, and did not even knew they were being attacked. The report concluded that since pilots routinely trained against larger US aircraft from their own squadrons, they were unaccustomed to looking for smaller, more agile aircraft flown by North Vietnam. Finally, USAF pilots were unfamiliar with enemy fighter tactics and aircraft capabilities, and did not develop or train with tactics intended to exploit enemy weaknesses. As a result, they were unable to adapt to the faster maneuvering they experienced in dogfights against North Vietnamese fighters.[2] Aircrew training and proficiency problems were not just limited to the Vietnam War. The Litton Corporation studied air combat trends in every conflict from World War I through the Vietnam War, and concluded that a pilot's first ten combat missions were the most critical.[3] Once an aircrew survived his first ten missions, his chances for victory and survival increased dramatically.

Graduated, Realistic Training

The lessons of these studies were quickly disseminated throughout the Air Force, and senior leaders directed dramatic changes in aircrew training. In response to the observation that multi-role fighter units could not effectively train in all missions, the Air Force specified a primary and secondary Designed Operational Capability (DOC) for each squadron—focusing on either air-to-air or air-to-ground missions. The DOC reduced the number of roles these aircraft were required to perform, and allowed pilots to specialize in their assigned mission. Rather than focusing on the quantity of hours flown, the DOC training measured the quality of training missions.[4]

In order to address the problems of visually identifying enemy fighters and developing tactics to exploit enemy weaknesses, TAC Commander General Dixon started an initiative—called "Readiness Through Realism"—to make training more intense and realistic than in the past. One key recommendation from the Red Baron report stated, "Realistic training can only be

gained through study of, and actual engagements with, possessed enemy aircraft or realistic substitutes."[5] Therefore, TAC made Dissimilar Air Combat Training (DACT) a mandatory part of a pilot's mission qualification and continuation training program. Between 1972 and 1976 the Air Force created four Aggressor Squadrons—flying T-38 and then F-5 trainer jets with Soviet-style paint schemes—specifically to provide DACT to fighter pilots. Rather than flying these jets like American pilots, aggressor pilots were required to learn and adopt Soviet-style fighter maneuvers and tactics. The squadrons were also assigned Ground Control Intercept (GCI) controllers who controlled aggressor aircraft using Soviet methods.[6] Two of these Aggressor squadrons were permanently based at Nellis AFB, one was stationed in England, and one was based out of the Philippines.

Improvements were not just limited to air-to-air training. In 1975, TAC initiated a program called CORONET REAL to improve air-to-ground training by upgrading Air Force ranges with realistic target displays, ground threat simulators, and assessment equipment.[7] Previously, training ranges provided generic range targets—such as painted bull's-eyes or stacked oil drums—that did not resemble realistic enemy targets. Under CORONET REAL, US training ranges were upgraded with improved target complexes—often using excess military equipment—that included tank concentrations; mock-ups of enemy surface-to-air missiles (SAM), anti-aircraft artillery (AAA); and even large industrial complexes. Electronic warfare (EW) ranges at Nellis AFB and Eglin AFB, Florida were also created using ground threat simulators to mimic a Soviet-style integrated air defense system (IADS). Manned SAM and AAA radar simulators not only emitted signals similar to the threats they were replicating, but they also tracked targeted aircraft and recorded miss distances on a computer for later analysis. The range complex also placed Styrofoam rockets called "smokey SAMs" around key target

areas to give visual cueing of a shoulder-fired SAM launch.

Finally, the CORONET REAL program included several initiatives to instrument training ranges in order to collect and present detailed feedback for aircrew training. Video cameras were slaved to SAM tracking radars to capture video of a pilot's reaction to being targeted—providing valuable feedback on the success of EW countermeasures and tactics. Ranges were also equipped with optical scoring equipment that could accurately measure the impact point of live or inert ordnance dropped on certain targets. Finally, the project added a range tracking system—the Air Combat Maneuvering Instrumentation (ACMI) system—to track aircraft flying on the ranges and reconstruct air-to-air training engagements. In 1975, TAC appropriated over $200 million for range improvements—most of which went to the Nellis Range Complex.[8]

The Birth of Red Flag

With the Air Force's increased emphasis on specialized and realistic aircrew training in the mid-1970's, the timing was ideal for "Moody" Suter and his peers to propose taking training to the next level. Armed with the results of the earlier studies indicating the importance of a pilot's first ten combat missions, the group proposed creating a training environment in which individual pilots could experience the rigors of air combat and try out new tactics in a realistic training environment. The Red Flag concept of operations (CONOPS) was presented at the TAC Fighter Weapons Symposium in April 1975 in a briefing entitled "Red Flag: Employment Readiness Training." It identified the opportunity to use existing resources—particularly Nellis AFB's two Aggressor Squadrons and the targets, threats, and instrumentation on the Nellis range complex—to create a two-week exercise to season inexperienced pilots. The CONOPS envisioned having a Red Flag central manager—called White Force—under the TFWC to

oversee realistic combat training for the Tactical Air Forces (TAF), direct Aggressor (Red Force) employment, and run Red Flag debriefs to identify mistakes and recommend improved tactics.

Under the Red Flag concept, operational TAF units—Blue Forces—would continually flow through Nellis for month-long deployments, with crews rotating after two weeks. The goal was to have each unit participate in Red Flag on a semi-annual basis. Red Flag training scenarios (Appendix A) would be tailored to a unit's specific DOC requirements, with seventy-five percent of sorties being dedicated to the unit's primary mission. The CONOPS envisioned Red Flag training employing a graduated training approach, focusing first on individual aircrew training and eventually progressing to composite strike missions in the latter part of each Red Flag period.

Finally, the CONOPS conceived of Red Flag being modular, incorporating training scenarios for mobility aircrews, Strategic Air Command nuclear bombers, Special Operations forces, and even joint participants from the Army, Navy, and Marine Corps. Although it identified the Nellis range as the primary area for Red Flag training, the CONOPS also recommended using additional training ranges throughout the southwest US to expand the scope and size of Red Flag training.[9] On 15 July 1975, General Dixon received the Red Flag concept brief and approved it on the spot for implementation. The first Red Flag exercise started on 27 November 1975.

Early Evolution of Flag Exercises

Initial feedback from aircrew participating in Red Flag exercises was overwhelmingly positive. In its first year, Red Flag held nine exercises and trained 2,500 aircrew from all USAF commands, the Air Force Reserve, the Air National Guard, the Marine Corps, the Navy, and the Army. The first year of Red Flag also saw several milestones, including large-scale joint

training with the Army at the Nellis range at Fort Irwin, California and operational test and evaluation of the F-15 and A-10 aircraft.[10] Virtually every post-exercise report during the first year of Red Flag also lauded the opportunity for units to develop and evaluate new tactics using a realistic and adaptive adversary. Although aircraft accident rates during the first four years Red Flag were four times higher than the TAC average, forward-looking senior leaders remained committed to pursuing realistic training.[11]

The huge success of the Red Flag exercise led the Air Force to consider additional ways in which to improve combat training. In 1981, when the Army created the National Training Center (NTC) at Fort Irwin, the Air Force de-linked Close Air Support (CAS) training from Red Flag and created the "Air Warrior" exercise. In 1976 TAC also created the "Blue Flag" exercise to provide realistic training to Numbered Air Force (NAF) personnel working in command and control facilities and on airborne C2 platforms. Following TAC's lead, the Pacific Air Force created a realistic training exercise—called Cope Thunder—using its Aggressor Squadron and training ranges in the Philippines. US allies also realized the value of realistic training, and in 1978 Canada hosted the first Maple Flag exercise that gave Red Flag-like training in terrain that more closely resembled that of Eastern Europe.

The next significant leap in realistic training came when General Wilbur Creech, TAC commander from 1978-1984, instituted the "Green Flag" exercise at Nellis AFB. The exercise, initially held twice each year, was similar to Red Flag but added new Blue Force players, including intelligence-gathering platforms, EW aircraft and NAF planning staffs. Green Flag's focus on electronic combat was also designed to counter TAC's assumption that aircrew had to fly at low altitude to avoid medium-altitude SAM threats. Since this put aircraft within range of AAA guns—a significant threat to aircraft—Gen Creech thought this was flawed logic.[12] At his

direction, Blue Force players first had to employ SEAD and EW to roll back enemy air defenses and gain air superiority at medium altitudes before attacking other targets. Aircrews quickly developed new tactics and integrated EW systems to address the challenge of operating at medium altitude. During his tenure, Gen Creech also expanded the size of the Red Flag and Blue Flag exercises, and continued range improvement programs by investing over $600 million in new targets and threat systems.[13]

As a result of TAC's numerous realistic training initiatives, the culture of Air Force training was completely transformed. Prior to 1975, the Air Force's catch phrase for peacetime training was "flying safety is paramount." With the advent of Red Flag, and other realistic training initiatives, the new philosophy of "train the way we are going to fight" was firmly entrenched in the vernacular of aircrew everywhere.

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[1] Message, 292225Z DEC 75, subject: Red Flag I—Well Done, Commander, Tactical Air Command, to Commander, Tactical Fighter Weapons Center, 29 December 1975.

[2] Michael Skinner, *Red Flag: Air Combat for the 80's* (Covato, C.A.: Presidio Press, 1984), 23-25 and Walter J. Boyne, "Red Flag," *Air Force Magazine*, November 2000, 47.

[3] Red Flag Employment Concept Briefing, 15 July 1975, in USAF Collection, AFHRA

[4] Benjamin S. Lambeth, *The Transformation of Air Power* (Ithaca, N.Y.: Cornell University Press, 2000), 65.

[5] Project Red Baron II: Air to Air Encounters in Southeast Asia, Volume 1, p. 21, USAF Tactical Fighter Weapons Center, Jan 1973.

[6] Walter J. Boyne, "Red Flag," *Air Force Magazine*, November 2000, 50.

[7] Message, 101600Z JUL 75, subject: CORONET REAL, Vice Commander, Tactical Air Command, to Tactical Air Command units, 10 Jul 1975

[8] History of the Tactical Air Command, 1975, Volume 1, p. 107, K417.01—75/12/31, in USAF Collection, AFHRA.

[9] Red Flag Employment Concept Briefing.

[10] Message, 151310Z DEC 76, subject: One Year of Red Flag, Commander, Tactical Air Command, to Chief of Staff of the Air Force, 15 December 1976.

[11] C.R. Andergogg, *Sierra Hotel: Flying Air Force Fighters in the Decade After Vietnam* (Washington, D.C.:Air Force History and Museums Program, 2001). 100.

[12] Oral History Interview of Gen Wilbur L. Creech by Hugh Ahmann, June 1992. Typed transcript, p. 192, K239.0512-2050, in USAF Collection, AFHRA.

[13] Ibid, p. 212.

Chapter 2

Red Flag Today

The day is coming when prompt global strike will be a reality, when the kill chain will be reliably and consistently compressed to minutes instead of hours or days, and when the sum of all our sensor, command and control, and information capabilities will be a cursor on the target and steel on the enemy.[14]

— Gen John Jumper, CSAF Sight Picture, 17 July 2003

As discussed in the previous chapter, Red Flag training was intended to mirror contemporary Air Force, joint, and coalition warfighting capabilities and doctrine. So it is no surprise that today's Red Flag—designed to realistically train the integrated force described above—is more complex and dynamic than ever before. This chapter will provide a brief overview of today's Red Flag exercise, looking at recent changes to the framework, participants, and training focus of the exercise.

Today's Red Flag—with between eight and ten two-week periods each year—trains over 13,000 aircrew, intelligence analysts, and support personnel annually. Exercises typically include a variety of US and allied Combat Air Force (CAF), mobility, and Special Operations aircraft performing various missions including: air superiority; interdiction; electronic warfare; airlift support; search and rescue; and Command, Control, Intelligence, Surveillance, and Reconnaissance (C2ISR). In the fictional Red Flag scenario, a modern enemy—possessing advanced fighters and SAMs—threatens to invade a US ally. The enemy's threatened use of chemical and biological weapons—delivered from mobile surface-to-surface missiles—does not

give participants time to roll back the enemy air defense network before flying strike missions. As in the past, today's Red Flag tests Blue Forces' ability to confront an advanced enemy force employing a robust threat using increasingly complex tactics. However, a number of new initiatives introduced over the past five years have increased the scope and complexity of today's Red Flag exercises.

Integrated Aggressor Force

In recent years, the Red Force has upgraded its capabilities and expanded the types of threats it can replicate. In 1989, the air aggressors upgraded to F-16 aircraft that can simulate the tactics and techniques of modern enemy fighters with a full mix of air-to-air missiles and jamming systems. In October 2003 the Air Force reactivated the 64th Aggressor Squadron—downgraded to a division of the 414th Combat Training Squadron (Red Flag) for 14 years—and eventually hopes to add F-15 aggressor aircraft. The 98th Range Wing at Nellis provides ground threat simulators and targets on the Nevada Test and Training Range (NTTR, formerly called the Nellis Range Complex.) The Air Force has also created two new aggressor capabilities: the 527th Space Aggressor Squadron, capable of conducting counter-space missions such as GPS jamming; and the 92nd Information Warfare Squadron, designed to replicate a realistic adversary IW capability. Additionally the Big Crow Program Office provides ground-based radar jammers specifically designed to deny AWACS the ability to detect and monitor aircraft. The combat search and rescue personnel assigned to Red Flag also serve as ground party aggressors who search for simulated downed aircrew on the range. All the aggressor capabilities are tactically coordinated by White Force in order to present an integrated and realistic adversary capability.

Nellis Combined Air Operations Center

Perhaps the single most significant change to the Red Flag structure over the past decade was the establishment of the Nellis Combined Air and Space Operations Center (CAOC). In July 2000, the Air Force Chief of Staff released a message outlining his vision for realistic training at the operational-level just as the Air Force had done with tactical training over the previous 20 years. The message specified, "all USAF assets/capabilities will now plan and execute together in a 'live fly' training environment, to include realtime [sic] command and control."[15] This helped justify the creation of the Nellis CAOC, whose task it is to incorporate AOC-level operations into all Nellis AFB training, testing, and exercises—including Red Flag.

With a core staff of AOC experts to facilitate training, the Nellis CAOC provides a battle-ready facility for deployed AOC personnel from Air Operations Groups (AOG) to conduct operational-level training during Red Flag exercises. Ideally—as happened in October 2003 when the 32nd AOG from Ramstein AB, Germany participated in Red Flag 04-1—a full CAOC staff will deploy to a Red Flag exercise in order to meet specific AOG training objectives. In order to increase the complexity of AOC play, the Nellis CAOC also integrated into a simulation-based training exercise called "Desert Pivot" run by the 705th Distributed Warfare Group at Kirtland AFB, NV. Now called "Virtual Flag," these operational-level exercises have been aligned with Red Flag exercises to provide Blue Force players in the CAOC with combined live-fly, constructive training (networked simulators) and virtual training (computer wargames) in ATO development and execution—with an emphasis on Time Sensitive Targeting (TST). Even without a Blue Force AOC, the White Force CAOC staff can provide tactical aircrews with TST training by passing updated target coordinates to airborne command and control aircraft during mission execution.

Wider Range of Participants

Another change is the diverse mix of participants deploying to Red Flag over the past five years. In addition to fighter, bomber, and electronic warfare units that have traditionally participated in Red Flag, a mix of non-CAF participants have become regular exercise participants. The Air Force Special Operations Command (AFSOC) has recently conducted large-scale integration of special operations aircraft into Red Flag to exercise their missions in coordination with CAF aircraft. Army Special Operations Forces and Marine Force Recon teams have also taken part in recent exercises to practice conducting special reconnaissance of time critical targets, and performing terminal guidance for air-launched weapons.

In 2000, ACC designated two Red Flag periods each year as "US-only" exercises in order to integrate selected Special Access Programs.[16] The purpose of creating a US-only exercise was to expose tactical-level Red Flag participants to operational capabilities previously not discussed at Red Flag, and to ensure these future AOC planners understand the capabilities and limitations of these systems before deploying for a crisis. Typically US-only Red Flags add B-2 and F-117 stealth aircraft; C2ISR platforms; and space and information warfare capabilities—all relatively new to Red Flag. US-only Red Flags have been instrumental in bringing previously stove piped communities together with the CAF in a live-fly environment.

Historically the full constellation of C2ISR platforms—including Compass Call, Rivet Joint, Joint STARS, U-2, and AWACS—only came together for Green Flag exercises, which emphasized intelligence collection and analysis and robust electronic warfare play. However, information gathered during Green Flag missions could only be used to affect the next day's missions. US-only Red Flags now offer the opportunity to use a robust constellation of C2ISR platforms to send real-time information to the CAOC in order to trigger TST events to train AOC players and generate new targets for tactical aircrews.

Expanded Training Focus

Changes in the exercise are not limited to new participants, but also include a shift in training focus. One significant change came when ACC eliminated Green Flag exercises and directed the "greening up" of all Red Flag exercises. This change acknowledged the fact that the CAF will never operate in a threatening SAM environment without the protection afforded by Suppression of Enemy Air Defenses (SEAD) and EW aircraft. Navy and Marine Corps EA-6B and Air Force F-16CJ aircraft participate in virtually every Red Flag exercise in order to jam or target enemy threat radars. Others (like Compass Call) usually play in US-only Red Flags. The proliferation of GPS-guided munitions has also led to an increased emphasis on bombing enemy SAM and AAA systems—a mission known as Destruction of Enemy Air Defenses (DEAD).

Another recent initiative was to group units deploying to Red Flag into their respective Air Expeditionary Force (AEF) rotation. In 2000, Air Combat Command (ACC) decided to use Red Flag as the capstone training event in a unit's "spin up" to an AEF deployment. By deploying to Red Flag by AEF, units could learn how to employ together and could work out any coordination issues prior to their actual deployment. The AEF lead wing became the "Core Wing" for the Red Flag exercise, and the Wing Commander who would lead the AEF deployment would use Red Flag to set the tone and direction of the deployment.

With the full range of Air Force and joint capabilities playing in US-only exercises, there is also a push to incorporate General Jumper's vision called "Global Strike Task Force" (GSTF) into Red Flag. The concept behind GSTF is to gain access to heavily defended areas by synergistically using speed, stealth, precision strike, standoff capabilities, and C2ISR systems to target an adversary IADS and rapidly establish air dominance.[17] Similar to General Creech's concerns about the logic for TAC's "go low" mentality, some senior Air Force leaders feel Red Flag's focus should be on using overwhelming combat power to negate an adversary threat rather

than trying to train to operate in that threat environment. Red Flag 03-1—held consecutively with Millennium Challenge '02 that included several GSTF missions at Nellis—incorporated the CSAF's guidance to conduct an IADS roll back campaign during the exercise.

One final change in Red Flag's training focus came in 2002 when the Joint Forces Command (JFCOM) directed that one Red Flag period every two years be designated a "Category 2 Joint Interoperability Training Exercise," intended to focus on component interoperability training and evaluation. Although Red Flag has always included joint participation, turning Red Flag into a joint exercise required JFCOM to assess players' performance in several Joint Interoperability Tasks, including: joint CAS, joint personnel recovery, joint fires, and joint SEAD.[18] Red Flag 03-2, scheduled for January 2003, was supposed to be first of the new "Joint Red Flag" exercises. The Army's 101st Aviation Division was scheduled to deploy 24 AH-64/Apache attack helicopters to conduct deep-strike operations missions during the exercise. Additionally, NTC (hosting Army III Corps) and Air Warrior were scheduled concurrently with Red Flag. All three exercises adopted a common threat scenario, and were to be executed and evaluated with joint integration in mind. Planning for Joint Red Flag was almost complete when it was cancelled several weeks prior to execution due to preparations for Operation IRAQI FREEDOM.

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[14] CSAF Sight Picture, *Technology-to-Warfighting: Delivering Advantages to Airmen*, 17 July 2003.

[15] Message, 061200Z Jul 00, subject: Coal Warfighter/Operational Warfighter Efforts, Chief of Staff of the Air Force, to Commander, Air Combat Command, 6 July 2000.

[16] HQ ACC, *Tenets of Red Flag*, on-line, Internet, 15 April 2004, available from https://do.acc.af.mil/doj/flags/tenets of rf.doc

[17] Col John McLean, "Global Strike: 8th Air Force Legacy Continues," *The Combat Edge*, Feb 03, on-line, Internet, 9 April 2004, available at http:www2.acc.af.mil/combat-edge/past_issues/Feb03/Stories/0203story3.htm.

[18] Briefing, Joint Forces Command, subject: Should RED FLAG be a Joint Exercise?, 6 June 2001.

Chapter 3

Challenges to Realistic Training

There is no better training for a fighter pilot than to participate in Red Flag. On night one of "Shock and Awe," the thought that went through my mind is we train to such a high standard. When I saw the AAA and SAMs coming towards us, it was a real eye-opener. But I think our overall training, which includes Red Flag, was solid and that is what carried us through that situation. [19]

— F-16CJ pilot Capt Shamsher Mann, on flying in Operation IRAQI FREEDOM

Air Force operations in every conflict since Operation DESERT STORM have proven the value of Red Flag. General Chuck Horner, the Combined Force Air Component Commander during Operation DESERT STORM, directly attributes the United States' success during that operation to realistic training programs that emerged in the post-Vietnam era. [20] However, the changes in the structure and focus of Red Flag exercises have also increased the difficulty of creating a realistic and coherent exercise, and present some challenges that must be addressed for the exercise to continue providing realistic training to combat aircrews.

Outdated Range and Assessment Tools

Today's Red Flag exercises integrate a wide mix of strike, stealth, EW, C2ISR, special operations, space, and information warfare capabilities to completely overwhelm an enemy force. Yet this full-spectrum Blue Force lacks an equivalent full-spectrum Red Force against which to plan and operate. This is not a new challenge. In an assessment of the first Red Flag exercise, a Red Flag report noted that "threat locations did not provide harassment within target

area[s]," and "threat density is insufficient and does not include the latest threat equipment…to insure [sic] training accomplished and tactics employed are realistic."[21] In these early exercises, strike packages had to be routed through one of the EW training ranges on their way to their designated targets just to get experience flying in a high-threat environment.[22] The 1975 CORONET REAL initiative aimed to fix this problem:

> By 1982 the TFWC Range must be able to increase its support to large, multi-aircraft exercises, tests, and training programs in a realistic combat environment…. On the Caliente and Tonopah Electronic Warfare Ranges, more than 100 electronic threats and numerous aggressor aircraft will be required, controlled through a semiautomatic integrated air defense system (IADS).[23]

However, today's range is largely unchanged from that used in the original Red Flag exercises. The majority of range targets still resemble Soviet-style formations of tanks, convoys, and SAM batteries. Ground threat simulators can only simulate older-generation threats such as the SA-2, SA-3, SA-6, SA-8, Roland, and AAA fire control radars—systems similar to those found in Iraq during Operation DESERT STORM. Additionally, contractor manpower shortfalls limit the number and duration of threat emitters supporting the multitude of range activities.[24] More significantly, range threats are only capable of emitting a signal that will trigger a fighter aircraft's radar warning receiver, but do not provide useful training for ISR, stealth, or EW participants who normally monitor or target the associated communication systems and "links and nodes" of a true enemy IADS. The result is that many Red Flag participants do not employ their systems as they would in an actual conflict—clearly not giving these participants realistic training.

Another limitation of the NTTR is that it lacks a realistic low-altitude threat. During the opening days of Operation DESERT STORM, the US quickly learned that the most dangerous place for a fighter to operate was below 10,000 feet. Yet the NTTR does not have systems designed to simulate or assess non-guided AAA—one of the most significant threats aircrews

face in any potential conflict area. As a result, Red Flag participants—focused more on surviving the mission than following realistic tactics—routinely operate at low-level in order to evade detection by Red air and radar systems. Similarly, "smokey SAMs" do not trigger IR jammers or missile launch detectors found on most modern helicopters and tactical airlift aircraft, and cannot be assessed to determine if an aircraft was "killed" by the missile.

Assessment tools have also not kept pace with evolving Air Force and joint capabilities. As the focus of Red Flag training has expanded, so too has the need for the Red Flag mass debrief to show the integrated and operational-level effects of all players' actions. The various assessment tools White Force staff has available to capture data are sufficient for reconstructing an attrition-based war (i.e. how many airplanes were shot down, and how close bombs fell to intended targets) but do not measure the effectiveness of Blue Force effects-based operations. For example, range threat operators are forced to manually record the effectiveness of electronic jamming against the threat system they are operating, and then call the results back to Nellis AFB where data is compiled for the mass debrief. This time consuming process should be automated to compile data and show the effectiveness of EW, SEAD, and DEAD in real time. In October 2002, the Red Flag staff started demonstrating the impact of EW, SEAD, and DEAD missions by showing slides with time slices depicting expanding and contracting SAM rings on a range map. Although this is a step in the right direction, these slides are only an arbitrary representation of the Blue Force's effect on the IADS rather than a true analysis of the impact of coordinated EW, SEAD, and DEAD operations.

Finally, the lack of threat simulators replicating latest-generation of "Double Digit" SAMs (the SA-10, SA-11, SA-12 and SA-20) mean that Red Flag participants are training against a threat less capable than what they are likely to face in combat. No pilot flying in a non-stealth

aircraft would willingly go up against these extremely capable systems. However by not training in a realistic and robust threat environment, Red Flag participants are gaining a false sense of security when they return from their Red Flag mission having successfully survived their first 10 combat missions against the limited threat on the NTTR. This realistic training challenge will increase exponentially when the F/A-22 and Joint Strike Fighter become operational.

Jack of All Trades, Master of None

One of the biggest criticisms of Red Flag over the past few years is the fact that—with the increase in specialized training events such as TST; CSAR; GSTF with stealth, space, and IO; IADS roll-back; SOF; and airlift—the exercise is becoming too diluted in its training focus. Every new training event often comes at the expense of another. For example, the opportunity to re-task actual strike aircraft against time critical targets during a large-force execution mission provides outstanding TST training for Blue Force AOC and airborne C2 personnel. However, it also impacts Red Flag's traditional format of planning a mission, flying exactly as planned, and then analyzing the mission to determine if problems came from flawed planning or flawed execution. To avoid this problem, Red Flag planners have scheduled additional range time for TST training in which a limited number of aircraft remain behind after flying their pre-planned missions to receive additional unplanned targets. However, this work-around clearly limits the overall training value of conducting TST training during Red Flag.

A second challenge to realistic training comes with the concept of rolling back the enemy IADS, either as part of a GSTF campaign or through execution of an integrated EW, SEAD, and DEAD campaign. Today's aircrews are fully conversant in the various ways in which to degrade an enemy's air defense system, and they expect to employ this in Red Flag. In actual combat operations, targeting critical components of an IADS is the best way to gain and maintain air

superiority. However using bomber aircraft—capable of employing dozens of simulated GPS-guided munitions from stand-off ranges—to preemptively destroy ground threats on the NTTR denies valuable surface-to-air threat training that tactical aircrew can only get at Red Flag. Additionally, the robust mix of EA-6B, F-16CJ, DEAD aircraft and non-kinetic capabilities are often literally fighting over who gets first shot at the limited number of threat simulators on the range, and few threats may remain when strike aircraft enter the threat area. The end result is that aircrew participating in Red Flag exercises may be learning the wrong lessons: that a handful of EW, SEAD and DEAD missions will be sufficient to roll back a modern enemy's IADS in just one mission.

Another challenge is the trade off between conducting CSAR training compared to the loss in large-force execution training when all assets are focused on rescuing a downed aircrew. Red Flag exercises typically include daily CSAR missions to pick up a downed aircrew on the range. However, two or four missions each exercise focus the entire package towards planning and executing a dedicated CSAR Task Force to rescue an aircrew that was notionally shot down during a previous mission. This provides an outstanding opportunity for aircrew to work through the multitude of coordination issues that naturally arise during this high-priority mission, but takes two to four missions away from conducting traditional composite strike missions against targets and threats on the range. The broad range of outstanding training opportunities simply cannot fit into a typical two-week Red Flag deployment.

Finally, it is still unclear how to balance the diverse training requirements of AOG personnel deploying to the Nellis CAOC with the important tactical training accomplished in Red Flag. The more Red Flag focuses on executing real-time command and control during live-fly missions, the less training tactical aircrews will get in decentralized mission planning and

execution. In December 1978, TAC conducted a feasibility experiment to determine if Red Flag

and Blue Flag could be combined into a combined flying and command and control exercise.

The results were not surprising:

> In common with their Blue Flag counterparts, the Red Flag aircrews reacted
> unfavorably to the combination, and a majority felt that training was degraded
> rather than enhanced…. Perhaps the most telling commentary, however, lay in
> the observation that the two exercise formats were at odds because they stressed
> widely divergent aspects of the air combat process: the macro-tactics applicable in
> a free-flowing scenario at the numbered air force level, and the micro-tactics
> utilized by strike flights and individual flight elements.[25]

There is a clear benefit in incorporating a Blue Force AOC into Red Flag—so the AOG staff

and tactical-level participants can experience the "fog and friction" of actual live-fly missions

and then discuss problems in the Red Flag mass debrief. However there is bound to be some

impact on tactical-level training as a result of this change.

Inconsistent Training for AEFs

As indicated in Chapter 2, not all Red Flag exercises are created equally. US-only Red

Flags bring together a robust mix of strike, stealth, C2ISR, EW, space and IW platforms and

capabilities in a exercise that truly reflects the way the CAF will fight in future conflicts. US-

only Red Flag participants get the opportunity to practice large-force employment in a high

threat environment with robust C2ISR feeds and a fully-manned AOC. Compare this with the

traditional Red Flag exercise that typically lack stealth platforms, many C2ISR players, and

usually does not incorporate a Blue Force CAOC. Two other air combat exercises, PACAF's

Cope Thunder and Canada's Maple Flag, offer a training focus similar to Red Flag's, but

typically include an even less diverse mix of participants and offer a less-robust aggressor threat.

Yet ACC views all of these exercises as equivalent realistic training exercises. Air Force

squadrons are scheduled to attend only one of these exercises during their 15-month AEF cycle, and clearly not all units will receive the same level of training.

This problem will become even more distinct when Joint Red Flag exercises become a regular occurrence. Joint training at Red Flag will take on increasing importance as Secretary Rumsfeld's Joint National Training Center (JNTC) initiative—part of his Transformation Planning Guidance—takes shape. JNTC seeks to do for the joint force what "Readiness through Realism" did for the Air Force in the post-Vietnam era. It aims to integrate training ranges, create more joint exercises, and leverage technology to integrate live-fly, constructive, and virtual training.[26] Red Flag 05-3.2, scheduled for March 2005, has already been designated as the next "Joint Red Flag" exercise.

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[21] Message, 271700Z DEC 75, subject: Red Flag I Critique, Commander, 4440th Tactical Training Group (Red Flag), to Deputy Director of Operations, Tactical Air Command, 27 December 1975.

[22] Briefing, Tactical Air Command, subject: Red Flag—Its Purpose Briefing, undated.

[23] Tactical Fighter Weapons Center, "Range Management Plan," October 1976, p. C-1, in USAF collection, AFHRA.

[24] US House Subcommittee on Military Readiness, *Statement by Maj Gen L.D. Johnston, Commander, Air Warfare Center*, 107th Cong., 8 March 2002, on-line. Internet, 12 April 2004, available from http://armedservices.house.gov/openingstatementsandpressreleases/107thcongress/02-03-08johnston.html.

[25] History of the Tactical Air Command, 1978, Volume 1, p. 238-239, K417.01—78/12/31, in USAF Collection, AFHRA.

[26] Deputy Secretary of Defense, DoD Transformation Implementation Plan, 10 June 2003. p. 10, on-line. Internet, 1 April 2004, available from http:// http://www.t2net.org/Iplan.pdf.

Chapter 4

Recommendations for Training Transformation

The rigorous and realistic training regimen which our military conducts provides our forces with extraordinary battlefield advantages…. For this advantage to persist in the future, we must transform our training in the same way we transform the rest of the force.

— DoD Transformation Planning Guidance, April 2003

Some may question whether Red Flag is truly in a period of transformation, or if the changes highlighted in previous chapters constitute a mere evolution of the Red Flag exercise to match modern ways of war. Others may question why it is important to make the distinction at all. The distinction becomes important when trying to determine whether the training emphasis of Red Flag exercises is shifting away from its true purpose of preparing tactical CAF aircrews for combat, or if Red Flag training must be transformed to reflect a change in the nature of warfare itself.

It appears that Red Flag <u>is</u> in a period of transformation. The combination of new participants (particularly in US-only exercises) and expanded training focus has resulted in a dramatically new exercise that mirrors the transformation in joint force capability. Where the original Red Flag worked up to a large-force employment mission as the graduation exercise, today's Red Flags start at this point. Instead of training Blue 4 to survive the first ten missions through tactical employment, today's Red Flag trains Blue 4 survive his first ten combat missions through the tactical and operational integration of escort, strike, C2ISR and non-kinetic

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capabilities in order to neutralize an enemy's combat capability. Today's Red Flag exercises have gone beyond Blue 4. Individual aircrew training is certainly important—and Red Flag still provides this—but recent initiatives such as the CSAF-directed IADS roll-back campaign suggests leaders and participants are willing to sacrifice some level of tactical training in order to teach the more important lesson of realistic mission execution. Red Flag now provides the opportunity for Air Force, joint and allied participants to train as they are <u>going</u> to fight—as an integrated joint and combined team. The following are just a few recommendations for ways in which to foster this training transformation.

Large-Scale Range Upgrades

More than any other factor, the quality of realistic at Red Flag will be determined by the state of the NTTR. The dramatic shift in Blue Force capabilities and expanded training focus has not been matched by an equivalent effort to update range capabilities or assessment tools. In order to address this significant training shortfall, the Air Force must undertake a range-improvement initiative—similar to CORONET REAL—to increase the fidelity of the NTTR. It must create a realistic IADS that can simulate the latest-generation SAM systems and present targetable links and nodes that connect these systems to a realistic command and control facility. The range should also incorporate a robust mix of assessable low-altitude SAM and AAA simulators. Finally, sufficient manning must exist to support 24/7 range operations. Red Flag training scenarios must change to reflect the most dangerous threat anticipated—i.e. a modern adversary employing an advanced and overlapping IADS—rather than the easiest threat to replicate or even the most likely expected threat. Finally, range upgrades should also include replicating modern target sets such as underground and hardened facilities, urban target complexes, and mobile targets such as convoys and SCUD launchers.

Effects-Based Assessment Tools and Procedures

The addition of an operational-level component to Red Flag exercises will require the Red Flag staff to give participants feedback on the overall effect of their integrated missions, and the range must incorporate new assessment systems that can show the effectiveness of EW and other effects-based operations on the NTTR. This will require the development of new assessment tools that provide real-time and recordable feeds, just as NACTS captures and reconstructs the air-to-air war over the range today. New assessment procedures—overseen by White Force assessors—can also aid in filling gaps in threat realistic threat replication. For example, it may not be possible to simulate and assess the impact of unguided AAA on the range. However, White Force assessors can use the Red ground order of battle to determine "high threat" areas where aircraft would be engaged by AAA, and then use statistical methods (i.e. roll the dice) to determine if low-flying aircraft transitioning these areas were damaged or destroyed.

An even greater challenge may be capturing data and providing assessment to the Blue Force participants in the CAOC. Currently the White Force CAOC staff tracks what TST targets were identified and attacked, and identifies procedural errors made by CAOC players. However CAOC-level assessment must be able to capture everything that happened during the mission to analyze what went right and what went wrong. For example, knowing that a TST event took twelve minutes from target detection to target destruction and assessment is good feedback for CAOC participants. More importantly, someone must also provide feedback on whether the targets engaged were truly the most fleeting or highest priority targets, and point out time critical targets that were not even detected. This may require better tools, technology, and manning.

Bring Back "Green Flag"

As previously discussed, the US-only Red Flag exercises are so unique in their force make-up and training focus that they cannot compare with a standard Red Flag exercise. In order to ensure that all AEFs receive equivalent training experiences, ACC should re-designate the two annual US-only Red Flag periods as "Green Flag" exercises. Today's US-only Red Flags incorporate many of the same ISR and EW participants that participated in past Green Flag exercises, and bringing back Green Flag will help concentrate these low-density/high demand assets into two exercise periods each year. Additionally, the new Green Flag exercises would reintroduce NAF staffs (AOG personnel) into realistic training exercises on a routine basis. Green Flag would be the best opportunity to exercise a Blue Force CAOC staff in a complex live-fly environment—something they would not get in a standard Red Flag exercise. Every Red Flag exercise should still incorporate some degree of EW training, just as "greened up" Red Flags do today. However, designating US-only Red Flags as a new exercise will ensure that all units participate in this specialized training opportunity.

In addition to bringing back Green Flag exercises, the Air Force should consider designating Joint Red Flag exercises as a new type of "Flag" exercise. These joint exercises will also provide participants a different training experience than the typical Red Flag, and using different exercise names for different types of training will ensure everyone understands the unique training focus of these exercises.

Create Modular Training Blocks

Not all specialized training events will necessitate coming up with a specialized Flag designator. Some unique training can still be accomplished during standard Red Flag exercises without significantly changing the focus of the entire exercise. In order to prioritize and

deconflict training in Red Flag, ACC should create modular training blocks similar to the training "scenarios" developed for the original Red Flag. Air Combat Command is currently considering extending the length of Red Flag to three-week periods to deal with the increased training focus of today's Red Flag. However, simply extending the length of the exercise will not ensure unit training is optimized. Using a modular training syllabus would allow the Red Flag staff to build a customized exercise schedule that balances unit training objectives and optimizes the use of scarce range time and threat support. Modules that are mutually beneficial, such as strike and reconnaissance, could be employed simultaneously and might not require additional range time for mission execution. Other modules that have conflicting goals (DEAD vs. SEAD vs. ground-threat training) or can be staggered (as TST is normally added to the end of a mission) will have to be coordinated and deconflicted. Some training modules may even occur over several days (like a dedicated IADS roll-back campaign), but may not require all units to participate.

Modular training at Red Flag would also allow White Force to prioritize daily training events, and would clearly identify each mission's primary training audience and objectives. By prioritizing training modules, White Force will ensure training that can only be accomplished at Red Flag takes priority over training that can be met through other avenues. For example, Red Flag is one of the few exercises available for tactical aircrews to practice large-force employment in a high threat environment. Most CAOC training, however, can also be accomplished in virtual and constructive exercises like Blue Flag or a number of other operational-level exercises. Creating training modules will allow Red Flag planners to integrate the increasing number of specialized training events without detracting from Blue 4 training.

Formalize Future Red Flag Initiatives

None of these recommendations will result in the transformation of realistic training without the support of senior Air Force and DoD leaders. Many of the recent improvements to the Red Flag exercise have come from the individual initiative of the Red Flag and Nellis CAOC staffs. However, the only way to institutionalize future initiatives and obtain the resources required to sustain an improved exercise is to formalize requirements and have them validated by senior Air Force and DoD leaders. More importantly, planners must be willing to abandon initiatives if the leadership decides not to invest the necessary resources to make them work.

Another problem in Red Flag transformation is that many changes have come down as higher-headquarters directives without any written guidance or detailed analysis by staff officers. When senior Air Force leaders pass through Nellis AFB, they often meet with the Air Warfare Center Commander and offer their thoughts on Red Flag improvements. However, this type of direction short-circuits the headquarters staffing process that normally identifies the risks and benefits of implementing such changes. One such example was the CSAF's direction that Red Flag conduct an IADS roll-back campaign during the beginning of each exercise period. Although this is the logical way to employ air forces during actual combat operations, exercising this at Red Flag has a dramatic impact on the traditional focus of high-intensity realistic training. Finally, all higher-headquarters directives to change the training focus of Red Flag should flow as written taskings in order to ensure Red Flag planners understand the intent of such changes. This is particularly important when verbal direction comes in direct conflict with previously issued written guidance such as the Tenets of Red Flag (Appendix B) or Commander ACC Exercise Plan 80—possibly outdated documents that guide the Red Flag staff in developing and executing the exercise.

Create a Tiger Team to Guide Red Flag Transformation

The transformation of Red Flag from a tactical-level single-service flying exercise to an operational-level joint, combined and even interagency exercise is already underway. Many of the recent changes have significantly improved the realism of Red Flag training, and have served to sharpen America's combat edge. However, some initiatives have had the opposite effect, possibly decreasing the realism or diluting the training focus of the exercise. In order to ensure the Red Flag transformation is managed correctly, the Air Staff and ACC should send a Tiger Team to Nellis AFB to review the exercise and recommend ways in which to improve realistic training at Red Flag. This Tiger Team should understand Secretary Rumsfeld's vision for training transformation, and should have the support of the ACC commander and CSAF. It must help the Red Flag staff identify new training objectives, document resource requirements, and guide the transformation Red Flag into a realistic and truly integrated joint air combat exercise.

Conclusion

One of the questions this paper sought to answer was "Would Moody Suter approve of today's Red Flag?" Looking at the original purpose of the exercise, it is clear that today's Red Flag still meets the objectives that "Moody" Suter and his peers laid out when they created the exercise. Today's Red Flag continues to give inexperienced airmen their first ten combat missions in a realistic training environment. The exercises go even further to give senior aircrew—package and mission commanders—a chance to synergistically employ a large-force execution mission against a diverse mix of threats and targets. Finally, "Moody" Suter would probably even applaud the expanding training focus of Red Flag to include the diverse mix of joint and coalition participants, although he would caution senior leaders to remain focused on the primary goal of training Blue 4 to fly in combat. From the start, Red Flag was designed to be modular, scaleable, and joint.

Suter would recognize that today's AOC staff must train with tactical-level aircrew in an environment where they too can make mistakes in a realistic training environment. This can best occur in a live-fly environment where real fog and friction are present.

The other question this paper explored was, "should Red Flag expand beyond Blue 4 and Mission Commander training?" The answer is clear: the transformation of Red Flag is already underway. But "Moody" Suter and his peers would argue that the current changes in Red Flag can—if not properly managed—will detract from the realism and training value of the exercise. Today's Red Flag can either provide limited training to all participants, or outstanding training to a limited number of participants. In order to take realistic training to the next level, the Air Force must invest time, money, and thought into how to fix the significant challenges that currently

limit realistic training at Red Flag. The Nevada Test and Training Range must be upgraded to provide a realistic, and targetable, adversary threat to all Red Flag participants. It must also integrate effects-based assessment tools to capture electronic warfare and other non-kinetic exercise play on the range. Exercise training must be better managed by making a distinction between the standard Red Flag and the more dynamic "Green Flag." Daily training must be prioritized and coordinated to ensure that all training audiences meet their training objectives— but that training tactical aircrew is the top priority. Finally, Red Flag's transformation must be managed to ensure new initiatives are funded and coordinated formally, and that such changes remain within the spirit and intent of the exercise.

Through Red Flag, and other realistic training initiatives, the Air Force has an historic opportunity to foster a new era of realistic training that focuses on integrating joint warfighting capabilities, conducting network centric warfare, and properly integrating a new generation of precision-guided munitions and non-kinetic capabilities into the CAF. Moreover, taking Red Flag to this new level of training will not come "on the cheap" as did the original Red Flag exercise that simply combined pre-existing Aggressor capabilities and ranges. The transformation of Red Flag will not occur without the active involvement of the flying community, and the unwavering support of senior Air Force and DoD leaders. Such transformation must be planned and guided to succeed. And the measure of success will only come when the next generation of aircrew returns safely from their first combat missions in a future conflict praising the value of Red Flag in preparing them for air combat.

Appendix A

Red Flag Summary, 1975-1976

Mission Scenarios

Red Flag training was—and continues to be—designed around the "crawl-walk-run" approach where mission complexity and threat levels were gradually increased over the course of the two-week exercise. During the first week, missions focused primarily on training individual aircrew training operating in small formations. Composite strike force missions (now called "large-force execution missions") were considered to be the "graduation-level event" for Red Flag. Initially Red Flag employed seven basic "scenarios" to drive aircrew training.[27]

Electronic Warfare Orientation – The first day of each unit's deployment to Red Flag included orientation flights on the Electronic Warfare ranges. The purpose was for crews to practice radar homing and warning (RAWR) signal interpretation and become familiar with the Nellis training range.

Close Air Support (CAS) – This scenario focused on conducting CAS missions using a Forward Air Controller-Airborne (FAC-A) to locate targets and direct strike aircraft. Strike aircraft would then deliver inert ordnance against designated targets. Two variants of the CAS scenario existed, one in a multi-threat environment and one in a low threat environment.

Interdiction – Normally limited to a four-ship of strike aircraft attempting to strike a target, with air and ground aggressors targeting strike aircraft.

Armed Reconnaissance – This scenario included attack aircraft taking off without any assigned targets, and then flying at low-altitude in a designated area looking for targets. This is similar to today's "kill box" operations.

Combat Air Patrol – This scenario involved having air-to-air fighters protect a particular area from aggressor aircraft. Often called a "MIG CAP," it was designed to protect a high-value target on the ground from enemy air attacks.

Escort – This scenario had air-to-air fighters escorting strike aircraft, and occasionally SAC strategic bombers, through high-threat areas to protect them from aggressor aircraft. Fighters also conducted airlift/airdrop escort for missions over the Army's training range at Fort Irwin, California.

Strike Control and Reconnaissance (SCAR) – SCAR missions had tactical reconnaissance aircraft visually acquiring a target, and then meeting up with strike aircraft in a low-threat area. Strike and reconnaissance aircraft then proceed to the target area, and the reconnaissance aircraft marked the target with smoke for the strike aircraft.

Composite Strike – Called "the heart of the Red Flag program," this involved twelve strike aircraft, six escort fighters, and four Wild Weasels for SAM suppression. The entire strike package was flown through a high-threat area (including ground-to-air and aggressor aircraft threats) on its way to the target area. In addition to exposing aircrew to air operations in a high-threat environment, this scenario required experienced aircrew to plan and execute a coordinated strike plan—using all available support assets—to destroy assigned targets.

Specialized scenarios were also developed to provide training to support elements. Search and rescue and escape and evasion became a significant part of all Red Flag exercises, and typically involved three scenarios:

SAR Scenario 1 – Involved a CAS strike in a medium-threat environment, with shoulder-fired SAMs and groundfire threatening rescue aircraft. Based on a typical Southeast Asia scenario, it involved a FAC-A controller to initiate a search-and-rescue effort and act as the on-scene-commander.

SAR Scenario 2 – Rescue helicopter crews en-route to pick up a downed aircrew would fly through the high EW threat area to test basic low-level tactics and familiarize themselves with RHAW indications.

SAR Scenario 3 – Included a pilot acting as a simulated downed aircrew conducting escape and evasion in Red Force controlled areas. Rescue helicopters would use covert tactics to locate survivors at designated safe areas adjacent to EW threat areas.

During its first year in existence, Red Flag quickly expanded to include a diverse mix of participants and training scenarios. Table 1 shows a summary of Red Flag exercises held between November 1975 and December 1976.[28]

Exercise/Date	Primary Unit/ DOC	Aircraft	Scenarios
RF I (Nov-Dec 75)	49th TFW (Air-to-Ground)	F-4D, OV-10 FAC-A, RF-4, CH-53, EC-121, F-105G/Wild Weasel	CAS, SCAR, armed recce, composite strike, nuclear strike, SAR/E&E
RF II (Jan 76)	180 TFG (ANG) (Air-to-Ground)	F-100, F-4, F-111, A-7/Sandy, O-2 FAC-A, HC-130 rescue	Strike, CAP, CAS, SCAR, interdiction, SAR/E&E
RF III (Feb-Mar 76)	33 TFW (Air-to-Ground)	F-4E, O-2, RF-4C, UH-1, EC-121, F-105, F-111, F-106/ADC, A-7, F-15A (OT&E)	Escort, CAS, interdiction, SCAR, CAP, composite strike, point/air defense, night penetration (vs. F-15A)
RF IV (Apr-May 76)	4 TFW (Air-to-Air)	F-4E, F-105D/G, F-111, B-52, C-130	Strike, CAP, interdiction, tactical resupply
RF V (May-Jun 76)	49 TFW (Air-to-Ground)	F-4,A-7, A-10 (OT&E), AC-120/Gunship, C-130/Combat Talon EW-6B/ECM, EA-6B (Navy)	Strike, CAS, interdiction, CAP/escort, composite strike, SCAR, recce SAR/E&E

RF VI (Jul 76)	131 TFW and 104 TFG (ANG) (Air-to-Ground)	F-100D, F-15A, A-7, F-4E, RF-4, OV-10, EC-121, C-141	CAS, interdiction, escort, XAP, escort, composite strike, SAR/E&E
RF VII (Aug 76)	23 TFW (Air-to-Ground)	A-7D, F-15A, RF-4C, OV-10, C-141	Interdiction, armed recce, SAR/E&E, escort, composite strike, CAS and airdrop for 82nd Abn Div at Ft Irwin, night SAR
RF VIII (Sep 76)	1st TFW (Air-to-air)	F-15A, A-7D, A-10	Interdiction, armed recce, CAP, area defense, bomber air defense, escort, composite strike, SAR/E&E, fire suppression
RF 77-1 (Oct-Nov 76)	354 TFW (Air to Ground)	A-7D, F-4, RF-4C, F-15, A-37, A-10, ABCCC, F-5, F-105, F-111, B-52	Interdiction, escort, SCAR, CAP SAR/E&E, armed recce, sector attack, composite strike, CAS and airlift for 1st Cav Div at Ft Irwin
RF 77-2 (Nov-Dec 76)	347 TFW (Air-to-ground)	F-4E, F-15A, A-7D, RF-4C, O-2, B-52, EC-121, F-4N (USMC), AH-1S (Army attack helo), OV-1 (Army)	SCAR, interdiction, CAS, helo escort, composite strike, armed recce, SAR/E&E, Forward Air Control

[27] History of the Tactical Air Command, 1976, Volume 1, p. 94, K417.01—76/12/31, in USAF Collection, AFHRA.

[28] History of the Tactical Air Command, 1975, Volume 1, pp. 110-112, K417.01—75/12/31, in USAF Collection, AFHRA and History of the Ninth Air Force, 1976, Volume 1, pp. 173-181, K533.01-3—76/12/31, in USAF Collection, AFHRA.

Appendix B

The Tenets of Red Flag

The eleven "tenets of Red Flag" were approved by HQ ACC/XO in April 2000 to define the scope of the Red Flag exercise and to provide planning and execution guidance to exercise participants and executing agencies.[29] It is clear these tenets focus solely on the tactical level, and should be revised in order to provide clear guidance to the Red Flag planning staff and exercise participants.

PURPOSE: The purpose of the tenets listed below is to define the scope of RED FLAG, "What it is" and "What it is not" and to provide planning and execution guidance to participants and executing agencies. Any changes to these tenets will require ACC/XO and AWFC/CC approval.

OBJECTIVE: The approved Tenets will be incorporated into COMACC EXPLAN 80. Each of the staff OPRs listed below will develop a CONOPS, as required, of sufficient detail to provide required guidance for implementation into FLAG exercises. The CONOPS will be added to COMACC EXPLAN 80 as attachments for planning and guidance purposes.

1. **Flying Safety** – Flying safety will be a major consideration when integrating any part of tactical operations into RED FLAG.
2. **Replicate "first 10 days" of war** – Red Flag's primary focus will be to replicate the first 10 days of a major tactical operation through Large Force Employment. The training is focused at the tactical level of warfare with the primary training audience being Blue 4 up to Mission Commander. Operational components above the Wing Operations Center (WOC) or Expeditionary Operations Center (EOC) will be replicated by a White Cell
3. **Provide AEF/AEW opportunity to plan and employ together** – The training cycle will be once every 15 ½ months. Large force employment (LFE) - RAP/training requirements. Provide units training opportunities that can't be accomplished at homestation. AEF/AEW lead wing will provide the Deployed Force Commander (DFC). AEF/AEW lead wing will act as core unit. AEWs will be afforded the opportunity to employ their EOC as part of the training audience.

4. **Gather and disseminate lessons learned (LL)** – Data collection will be of sufficient detail to facilitate an evaluation of Tactics, Training, and Procedures (TTPs) for events that occur in LFEs down to Blue 4's execution. 414CTS personnel, utilizing the collected data, will facilitate a detailed debrief that will highlight immediate lessons learned focusing on game plan versus execution and aircrew survivability. The intent is to be able to apply these LL to the next days missions. Lessons learned will be submitted by the participating units and the 414CTS, the IAW AFI 10-204 and ACC Sup 1, to HQ ACC/XOT for incorporation into the LL database. Lessons learned form recent conflicts will be used to emphasize special interest areas and influence scenarios in follow-on FLAGs. (i.e. Tactics and Procedures, Integrated Air Defense arrays, Target Arrays, C2, ROE).

5. **Opportunity for free exchange and employment of tactical ideas** – RED FLAG provides aircrews the opportunity to exchange ideas between USAF units, other/joint services, and coalition players. Threat & Aircraft capabilities briefs. RED FLAG provides the opportunity for inter-service and coalition training. Tactical concepts employed at RED FLAG must meet AFTTP 3-1 and flight safety criteria before being executed.

6. **RED FLAG will afford airmen the opportunity to practice employment tactics throughout the full spectrum of tactical warfare (i.e. practice the way we plan to fight)** – Every RED FLAG period will have aspects of Offensive Counter Air (OCA), Interdiction (INT), Suppression of Enemy Air Defenses (SEAD), and Command and Control (C2). RED FLAG will be able to integrate Low Observable (LO) aircraft into every RED FLAG. The level of effort and mode of participation will vary depending on other participants, funding available, and training objectives. The other aspects of tactical warfare will be integrated into RED FLAG on an "as needed" basis to optimize aircrew training. These include Close Air Support (CAS), Combat Search and Rescue (CSAR) (OPR: ACC/XOF), Special Operations Forces (SOF), Dynamic Retargeting, Tactical Airlift, Air-Air refueling.

7. **RED FLAG affords the opportunity to introduce aircrews to tactical enablers that are critical to the success of tactical warfare** – The following enablers will be common to every RED FLAG period: Rules of Engagement (Combat ID, Target ID); Intelligence collection, analysis, and dissemination; Information Warfare (IW); Communication/Data link integration (Comm Plan); Battle Management/Command and Control; Survival, Escape, Resistance, and Evasion (SERE) training.

8. **RED FLAG will replicate viable and current threats, target arrays, and C2 architectures in scenarios that simulate a cross section representation of significant Areas of Responsibility (AOR) throughout the world** – Each RED FLAG period will have the following scenario elements: Air-Air threat, Surface-Air threat, Target Array; Selected RED FLAG periods will also incorporate elements of RED Force Information Warfare, Electronic Counter Measures, and Camouflage, Concealment, and Deception (CCD); Integration of these elements will provide a crawl, walk, run approach to aircrew training. The lethality of the threat array and the difficulty of the target set will be determined by the Deployed Force Commander (DFC) and the 414CTS/DO.

9. **RED FLAG "U.S.-only" periods will be reserved to fully integrate Special Access Programs (SAP), Special Access Required (SAR) elements of tactical warfare into RED FLAG** - ACC will schedule a number of "U.S.-only" RED FLAG periods per year

to afford the opportunity to fully integrate special access programs into aircrew training. The number of "U.S.-only" FLAGs each year will be determined by the ACC/XO staff based on CAF annual training requirements. The level of effort and fidelity of training presented in each of these periods will be determined by the ACC/XO staff in conjunction with the Air Warfare Center at Nellis AFB.

10. **RED FLAG will not be used as a test bed for programs or tactics that are not operationally approved nor is it an environment to conduct inspections, evaluations, or mission qualification checks** - Integration of any tests or non-operational equipment into the RED FLAG program will require ACC/XO approval. Any tests or non-operational equipment integrated into RED FLAG with ACC/XO approval must be transparent to the training audience and must not drive the FLAG scenario in any way. Red Flag provides an open forum for inexperienced aircrew to improve their tactical airmanship skills and learn from their mistakes. An evaluation environment is not conducive to a non-attribution learning environment.

11. **Red Flag will provide (NAF and) unit Intel a realistic training environment** – Red Flag provides a solid mission planning opportunity for intelligence personnel to hone their skills and work with USAF, Sister service and coalition aircrews. Red Flag affords Intel personnel an opportunity to train at a FOL with fielded systems and architectures not available at their home unit.

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[29] Tactical Air Command, "Tenets of Red Flag," April 2000, on-line, Internet, 15 April 2004, available from https://do.acc.af.mil/doj/flags/tenets of rf.doc.

Glossary

AAA	Anti-Aircraft Artillery
ACC	Air Combat Command
ACMI	Air Combat Maneuvering Instrumentation
AEF	Air Expeditionary Force
AFSOC	Air Force Special Operations Command
AOC	Air and Space Operations Center
AOG	Air Operations Group
C2ISR	Command, Control, Intelligence, Surveillance and Reconnaissance
CAF	Combat Air Forces
CAP	Combat Air Patrol
CAS	Close Air Support
CAOC	Combined Air and Space Operations Center
CONOPS	Concept of Operations
DACT	Dissimilar Air Combat Training
DCA	Defensive Counter Air
DEAD	Destruction of Enemy Air Defenses
DOC	Designed Operational Capability
E&E	Escape and Evasion
EW	Electronic Warfare
FAC-A	Forward Air Controller-Airborne
GCI	Ground Controlled Intercept
GSTF	Global Strike Task Force
IADS	Integrated Air Defense System
JEFX	Joint Expeditionary Force Exercise
JFCOM	Joint Forces Command
JNTC	Joint National Training Capability
NACTS	Nellis Air Combat Tracking System
NAF	Numbered Air Force
NTC	National Training Center
NTTR	Nevada Test and Training Range
OCA	Offensive Counter Air
RHWR	Radar Homing and Warning Receiver
SAC	Strategic Air Command
SAM	Surface-to-Air Missile
SAR	Search and Rescue
SCAR	Strike Control and Reconnaissance
SEAD	Suppression of Enemy Air Defenses
TAC	Tactical Air Command
TAF	Tactical Air Forces
TFWC	Tactical Fighter Weapons Center
TST	Time Sensitive Targeting

Blue 4. The least experienced wingman in a typical 4-ship formation—flying the 4 slot in the Blue Force formation.

Blue Force. Exercise participants who are playing the role of friendly forces.

Command and Control. The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission.

Constructive Training. Training or exercises that involve people operating networked simulators in a realistic manner to train for combat operations. Also known as Distributed Mission Training.

Effects Based Operations. Xx

Electronic Warfare. Any military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. Includes electronic attack, electronic protection, and electronic warfare support.

Intelligence. The product resulting from the collection, processing, integration, analysis, evaluation, and interpretation of available information concerning foreign countries or areas.

Live-Fly Training. Training or exercises that involve people operating their equipment in a realistic manner to train for combat operations.

Reconnaissance. A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area.

Red Force. Exercise participants who are playing the role of enemy forces.

Surveillance. The systematic observation of aerospace, surface, or subsurface areas, places, persons, or things by visual, aural, electronic, photographic, or other means.

Tiger Team. A group of subject matter experts who are assigned to review a particular problem and offer their solutions.

Time Critical Target. A target that is fleeting or of such high value that it must be attacked immediately.

Virtual Training. Training or exercises that involve people interfacing with computers to replicate combat operations.

White Force. Exercise controllers who observe and control exercise play, capture lessons, and facilitate the open exchange of information to analyze exercise play.

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